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EXAMINER	
HUYNH, PHUONG N	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/527,496	TAHARA ET AL.	
	Examiner	Art Unit	
	Phuong Huynh	1644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *three* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-5 and 7-22* is/are pending in the application.

4a) Of the above claim(s) *1, 3-4 and 11-19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5,7-10 and 20-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *3/11/05* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/13/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1, 3-5 and 7-22 are pending.

2. Upon reconsideration, the restriction mailed August 9, 2007 is hereby withdrawn. New election restriction is follow.

3. Restriction to one of the following inventions is required under 35 U.S.C. 121 and 372:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1:

1. Claims 1, 3-4, 9-10 and 20-22, drawn to a specific **nonapeptide** or a specific decapeptide comprising the specific amino acid sequence of SEQ ID NO: 2, 3, 5, 8, 11 or 12 or a peptide with cytotoxic T cell inducibility, wherein one, two, or more amino acids have been substituted or added to said amino acid sequence.

2. Claims 5, 7-10 and 20-22, drawn to a specific **nonapeptide** or a specific decapeptide comprising the specific amino acid sequence of SEQ ID NO: 29, 30, 33, 34, 40 or 46 or a peptide with cytotoxic T cell inducibility, wherein one, two, or more amino acids have been substituted or added to said amino acid sequence.

3. Claim 17, drawn to an **isolated cytotoxic T cell** that is induced by using a specific peptide.

4. Claim 11-13 and 18-19, drawn to an **exosome** that present on its surface a complex comprising a specific peptide, an **isolated antigen-presenting cell** that presents a complex of an HLA antigen and a specific peptide.

5. Claims 14-15, drawn to **a method for inducing an antigen-presenting cell** with high cytotoxic T cell activity **using a specific peptide**.

6. Claim 16, drawn to **a method for inducing an antigen-presenting cell** with high cytotoxic T cell activity wherein the method comprises the step of **introducing a gene** that a polynucleotide encoding a specific peptide.

The inventions listed as Groups 1-6 do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Flamme et al teach a peptide such as quail FLK-1 and mouse FLK-1 (VEGFR-2) polypeptide comprising the amino acid sequence VIAMFFWLL, which is 100% identical to the claimed SEQ ID NO: 30 (see page 701, FIG4, residues 1-9 or residues 1-10 of the reference sequences, in particular). The term "comprising" is open-ended. It expands the claimed nonapeptide to include additional amino acids at either or both ends to include the reference sequences. The reference polypeptide also anticipates the claimed peptide having two or more amino acids have been added to the amino acid sequence of SEQ ID NO: 30. The reference polypeptide inherently has cytotoxic T cell inducibility since T cell generates T cells epitope with 9mers. The C terminal amino acid reference of the reference peptide is leucine (see sequences in Figure 4, in particular). Thus the reference teachings anticipate the claimed invention of Group 1. Since Applicant's inventions do not contribute a special technical feature when viewed over the prior art they do not have single general inventive concept and lack unity of invention.

Accordingly, Groups 1-6 are not so linked as to form a single general inventive concept and restriction is proper.

This application contains claims directed to the following patentably distinct species of peptide identifiable by SEQ ID NO, for example.

The species are independent or distinct because these peptides have different structure as identifiable by different amino acid sequence and binds to T cell receptor with high affinity but not high CTL activity i.e., SEQ ID NO: SEQ ID NO: 2, 3, 5, 8, 11 or 12 or induces high CTL activity but does not binds to T cell receptor with high affinity, i.e., SEQ ID NO: 29, 30, 33, 34, 40 or 46. Therefore, they are patentably distinct.

Irrespective of whichever group the applicant may elect, the applicant is further required under 35 U.S.C. 121 to elect a single disclosed species of peptide identifiable SEQ ID NO such as the ones recited in claims 1 and 5 for prosecution on the merits to which the claims shall be

restricted if no generic claim is finally held to be allowable. Currently, claims 1, 5, 9, 10, 11, 14, 15, 16, 17, 18 and 20 are generic.

There is an examination and search burden for these patentably distinct species due to their mutually exclusive characteristics. The species require a different field of search (e.g., searching different classes/subclasses or electronic resources, or employing different search queries); and/or the prior art applicable to one species would not likely be applicable to another species; and/or the species are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

4. Applicant's election with traverse of Group 2, Claims 5, 7-10 and 20-22, drawn to a nonapeptide that reads on the species of SEQ ID NO: 30, a pharmaceutical composition comprising said peptide and a vaccine comprising said peptide, filed 10/9/07, is acknowledged. The traversal is on the grounds that the inventions of Groups 2-4 share a special technical feature as set forth in §1.475(a), namely a peptide of claim 5. Accordingly, Groups 2-4 should be examined in a single application. Applicants note further that the inventions of Groups 1, 3, and 4 share a special technical feature, namely a peptide of claim 1. Finally, applicants note that claim 16 (directed to methods of inducing an antigen presenting cell using a polynucleotide encoding a peptide of claims 1 or 5) was not included in any restriction group in the Office Action. Applicants respectfully submit that claim 16 should be examined with the inventions of Groups 2-4, because it uses a peptide of claim 5. Claim 16 also shares a special technical feature with the inventions of Group 1, 3, and 4, namely a peptide of claim 1.

In response, the inadvertent missing claim 16 in the restriction mailed August 9, 2007 has been corrected. The Examiner thanks Applicants for bring that to the Examiner's attention.

With respect to applicant's argument that Groups 2-4 (now Groups 2-6) share a special technical features namely peptide of claim 5 should be examined in a single application, the inventions of Groups 1-6 was to have no special technical feature that defined the contributions over the prior art of Flamme et al teach a peptide such as quail FLK-1 and mouse FLK-1 (VEGFR-2) polypeptide comprising the amino acid sequence VIAMFFWLL, which is 100% identical to the claimed SEQ ID NO: 30 (see page 701, FIG4, residues 1-9 of the reference quail sequence and residues 771-779 of the reference mouse sequence, in particular). Flamme et al teach a peptide such as quail FLK-1 and mouse FLK-1 (VEGFR-2) polypeptide comprising the amino acid sequence VYSSEEAEL, which is 100% identical to the claimed SEQ ID NO: 2 (see

page 701, FIG4, residues 54-62 of the reference quail sequence and residues 824-832 of mouse sequence, in particular). The term "comprising" is open-ended. It expands the claimed nonapeptide to include additional amino acids at either or both ends to include the reference sequences. The reference polypeptide also anticipates the claimed peptide having two or more amino acids have been added to the amino acid sequence of SEQ ID NO: 30 or SEQ ID NO: 2. The reference polypeptide inherently has cytotoxic T cell inducibility since T cell generates T cells epitope with 9mers. The C terminal amino acid reference of the reference peptide is leucine (see sequences in Figure 4, in particular). Thus the reference teachings anticipate the claimed invention of Group 1. Since Applicant's inventions do not contribute a special technical feature when viewed over the prior art they do not have single general inventive concept and lack unity of invention.

Accordingly, Groups 1-6 are not so linked as to form a single general inventive concept and restriction is proper.

Contrary to applicant's assertion that claim 16 should be examined with the invention of Groups 2-4 (now Groups 2-), it is noted that the technical feature of invention 6 is the method of using a polynucleotide encoding a specific peptide while the methods of Group 5 is a method of using a peptide. Polynucleotide comprises purine and pryrimidines units. A peptide comprises amino acid residues. These structural differences give rise to unique functional properties that are not interchangeable and thus give rise to distinct utility. Polynucleotide encodes a protein while a T cell epitope peptide binds to T cell receptor. The method of Group 6 does not require the product of Groups 1-4.

Therefore, the requirement of Group 2 and Groups 1 and 3-6 is still deemed proper and is therefore made FINAL.

5. Claims 1, 3-4 and 11-19 are withdrawn from further consideration by the examiner, 37 C.F.R. 1.142(b) as being drawn to non-elected inventions.

6. Claims 5, 7-10, and 20-22, drawn to nonapeptide that reads on the elected species of SEQ ID NO: 30, are being acted upon in this Office Action.

7. Claim 5 is objected to because SEQ ID NO: 29, 30, 33, 34, and 40 are not decapeptide; Said SEQ ID NO: 29, 30, 33, 34, and 40 are nonapeptides (9-mers).

8. Claim 5, 8, 9, 10, and 20 are objected to for reciting non-elected embodiments.

9. Claims 9-10 are objected to because "pharmaceutical" is an adjective and not a noun. The word "composition" is missing in claims 9-10.

10. The disclosure is objected to because (1) incorporation of subject matter into the patent application by reference to a hyperlink and/or other forms of browser-executable code is considered to be an improper incorporation by reference. See MPEP 608.01(p), paragraph I. regarding incorporation by reference. Therefore the embedded hyperlinks and/or other forms of browser-executable code disclosed on pages 12, at line 31, page 17, at line 27 and page 21 at line 22 of the instant specification are impermissible and require deletion. Where the hyperlinks and/or other forms of browser-executable codes are part of applicant's invention and are necessary to be included in the patent application in order to comply with the requirements of 35 U.S.C. 112, first paragraph, and applicant does not intend to have these hyperlinks be active links, then this objection will be withdrawn and the Office will disable these hyperlinks when preparing the patent text to be loaded onto the PTO web database.

11. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

12. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

13. Claims 5, 7-8, 9-10, and 20-22 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter, a product of nature. Amending the claim 5 to encompass an isolated nonapeptide that does not occur in nature would obviate this rejection.

14. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

15. Claims 5, 7-10, and 20-22 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling only for (1) an isolated nonapeptide consisting of the amino acid sequence of SEQ ID NO: 30 that binds to HLA-A 0201 and induces high CTL activity, and (2) a composition comprising the amino acid sequence of SEQ ID NO: 30 for inducing cytototic T cell, **does not** reasonably provide enablement for (1) any nonapeptide or decapeptide *comprising* the amino acid sequence of SEQID NO: 30, (2) any peptide with cytotoxic T cell inducibility wherein one, two or more amino acids have been substituted or added to the amino acid sequence of SEQ ID NO: 30, (3) any peptide mentioned above wherein the second amino acid from the N terminus is leucine or methionine, (4) any peptide mentioned above wherein the C-terminal amino acid is valine or leucine, (5) any pharmaceutical for preventing any tumors or treating any diseases such as the ones recited in claim 10 wherein the pharmaceutical comprising one or more nonapeptide or decapeptide *comprising* the amino acid sequence of SEQID NO: 30 or any peptide with cytotoxic T cell inducibility wherein one, two or more amino acids have been substituted or added to the amino acid sequence of SEQ ID NO: 30, (6) any vaccine comprising any nonapeptide or decapeptide *comprising* the amino acid sequence of SEQID NO: 30, or any peptide with cytotoxic T cell inducibility wherein one, two or more amino acids have been substituted or added to the amino acid sequence of SEQ ID NO: 30 as set forth in claims 5, 7-8, 9-10, and 20-22. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in **scope** with these claims.

Factors to be considered in determining whether undue experimentation is required to practice the claimed invention are summarized *In re Wands* (858 F2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988)). The factors most relevant to this rejection are the scope of the claim, the amount of direction or guidance provided, the lack of sufficient working examples, the unpredictability in the art and the amount of experimentation required to enable one of skill in the art to practice the claimed invention. The specification disclosure is insufficient to enable one skilled in the art to practice the invention as broadly claimed without an undue amount of experimentation.

The breadth of the claim encompass unlimited amount of possible peptides because the term comprising and unlimited amount of substitution or addition to the amino acid sequence of SEQ ID NO: 30 in claim 5.

The specification discloses various nanopeptides from human KDR such as the ones shown in Table 2 and Table 4. Cytotoxic T cell recognition of these peptides consisting of the amino acid sequence selected from the group consisting of SEQ ID NO: 2, 3, 5, 8, 11 and 12 from KDR is restricted to HLA-A2402 (Table 1) and these peptide bind to T cell receptor with high affinity. Cytotoxic T cell recognition of these peptides consisting of the amino acid sequence selected from the group consisting of SEQ ID NO: 29, 30, 33, 34, 40 and 46 from KDR is restricted to HLA-A20201 (Table 4) and these peptide bind to T cell receptor with low affinity. However, these low affinity peptide induces high level of CTL response as measured by IFNγ ELISPOT *in vitro*, see page 19. These peptides were used to generate human CTL clones, see page 24 Table 7 or antigen presenting cell.

The specification does not teach how to make any peptides as set forth in claims 5, 7-8, 9-10, and 20-22 wherein one, two, or more amino acids have been substituted or added to the amino acid sequence of SEQ ID NO: 30. The term "comprising" is open-ended. It expands the peptide to include additional amino acids at either or both ends. Further, there is insufficient guidance as to the structure of the peptide after two or more amino acids have been substituted or added. There is insufficient guidance as to which amino acids within such peptide can be substituted or added such that the peptide still maintains T cell recognition. Given the numerous substitutions and additions, the final peptide would have no resemblance to the peptide consisting of the amino acid sequence of SEQ ID NO: 30, much less the peptide still induces CTL activity. let alone such peptide is efficacious for treating and/or preventing any and all tumors or treating any diseases such as diabetic retinopathy, chronic rheumatoid arthritis, psoriasis, and atherosclerosis.

The state of the art as taught by Leggatt et al (J Immunology 161: 4728-4735, 1998; PTO 892) demonstrates that nonconservative changes in amino acid side chains, which apparently do not interact directly with the T cell receptor can also influence TCR recognition of MHC class I/peptide complex. Leggett et al show that single substitutions do not always allow the prediction of the outcome of double substitutions and that CTL silenced by a single mutation can be reengaged by a compensating second substitution (see page 4728, col. 2, in particular).

Baxevanis et al (Cancer Immunol Immunother 55: 85-95, 2006; PTO 892) teach immunogenicity of a given CTL peptide does not necessarily correlate with increased affinity for binding to MHC class I alleles. For instance, HER-2 (10420) restricted by H-dDq was shown to generate CTL lines *in vitro*, which upon adoptive transfer could highly protect non-transgenic

mice from spontaneous mammary carcinomas. However, when alanine was substitute for glutamate at position 2, this peptide demonstrated markedly improved recognition by a T cell clone. Given the numerous amino acids substitutions in SEQ ID NO: 30 and the term "comprising" is open-ended, it is unpredictable which undisclosed peptide still maintains TCR recognition, let alone induces high CTL activity.

With respect to pharmaceutical for "preventing" tumors, there is insufficient *in vivo* working example showing any peptide mentioned above could treat any and all tumors, much less "preventing" any tumors from happening. The specification fails to provide guidance and working example as how to select or identify an individual before tumors set in, how to predict who would or would not have which type of cancers, let alone administering which peptide in such individual could prevent any tumors or cancer from happening.

With respect to vaccine for inhibiting angiogenesis at a disease site, there is insufficient *in vivo* working example showing administering any peptide such as any nonapeptide or decapeptide *comprising* the amino acid sequence of SEQID NO: 30 or any peptide with cytotoxic T cell inducibility wherein one, two or more amino acids have been substituted or added to the amino acid sequence of SEQ ID NO: 30 or peptide consisting of SEQ ID NO: 30 could prevent any cancer from happening in animal.

Baxevanis et al (Cancer Immunol Immunother 55: 85-95, 2006; PTO 892) teach vaccination studies in animals utilizing HER-2/neu peptides have been successful in eliminating tumor growth. In humans, however, although immunological responses against the peptides used for vaccination, no clinical responses have been described. Because HER-2 receptor, like KDR receptor is a self-antigen, functional immune responses against it may be limited through tolerance mechanism (see abstract, in particular).

Mestas et al (J Immunology 172: 2731-2738, 2004; PTO 892) teach there are differences between mouse and human immunology. As therapies for human diseases become ever more sophisticated and specifically targeted, it becomes increasingly important to understand the potential limitations of extrapolating data from mice to humans. The literature is littered with examples of therapies that work well in mice but fail to provide similar efficacy in humans (see entire document, page 2731, col. 2, in particular).

Accordingly, it would require undue experimentation of one skilled in the art to practice the claimed invention. See page 1338, footnote 7 of Ex parte Aggarwal, 23 USPQ2d 1334 (PTO Bd. Pat App. & Inter. 1992).

In re wands, 858 F.2d at 737, 8 USPQ2d at 1404 (Fed. Cir. 1988), the decision of the court indicates that the more unpredictable the area is, the more specific enablement is necessary. In view of the quantity of experimentation necessary, the limited working examples, the unpredictability of the art, the lack of sufficient guidance in the specification and the breadth of the claims, it would take an undue amount of experimentation for one skilled in the art to practice the claimed invention.

16. Claims 5, 7-10, and 20-22 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

The specification does not reasonably provide a **written description** of (1) any nonapeptide or decapeptide *comprising* the amino acid sequence of SEQID NO: 30, (2) any peptide with cytotoxic T cell inducibility wherein one, two or more amino acids have been substituted or added to the amino acid sequence of SEQ ID NO: 30, (3) any peptide mentioned above wherein the second amino acid from the N terminus is leucine or methionine, (4) any peptide mentioned above wherein the C-terminal amino acid is valine or leucine, (5) any pharmaceutical for preventing any tumors or treating any diseases such as the ones recited in claim 10 wherein the pharmaceutical comprising one or more nonapeptide or decapeptide *comprising* the amino acid sequence of SEQID NO: 30 or any peptide with cytotoxic T cell inducibility wherein one, two or more amino acids have been substituted or added to the amino acid sequence of SEQ ID NO: 30, (6) any vaccine comprising any nonapeptide or decapeptide *comprising* the amino acid sequence of SEQID NO: 30, or any peptide with cytotoxic T cell inducibility wherein one, two or more amino acids have been substituted or added to the amino acid sequence of SEQ ID NO: 30 as set forth in claims 5, 7-8, 9-10, and 20-22.

The specification discloses various nanopeptides from human KDR such as the ones shown in Table 2 and Table 4. These CTL epitopes restricted to HLA-A2402 consisting of the amino acid sequence selected from the group consisting of SEQ ID NO: 2, 3, 5, 8, 11 and 12 as shown in Table 1. These peptides bind to T cell receptor with high affinity. However, peptide restricted to HLA-A20201 consisting of the amino acid sequence selected from the group consisting of SEQ ID NO: 29, 30, 33, 34, 40 and 46 binds to T cell receptors with low affinity, see page Table 4. These low affinity peptides induce high level of CTL response as measured by

IFNγ ELISPOT *in vitro*, see page 19. These peptides were used to generate human CTL clones, see page 24 Table 7 or generating antigen presenting cell (exosome).

However, none of the peptides discloses in the specification are longer than 10 amino acids in length. The term "comprising" is open-ended. It expands the peptide of SEQ ID NO: 30 to include additional amino acids at either or both ends. There is insufficient written description about the structure associated with function of any peptide comprising the amino acid sequence of SEQ ID NO: 30.

Further, The specification does not adequately describe any peptides as set forth in claims 5, 7-8, 9-10, and 20-22 wherein one, two, or more amino acids have been substituted or added to the amino acid sequence of SEQ ID NO: 30. There is a lack of disclosure as to the structure of the peptide after two or more amino acids have been added or which amino acids to be substituted. Given the numerous substitutions and additions, the final peptide would have no resemblance to the peptide consisting of the amino acid sequence of SEQ ID NO: 30, much less such peptide still induces CTL activity for treating and/or preventing any and all tumors or treating any diseases such as diabetic retinopathy, chronic rheumatoid arthritis, psoriasis, and atherosclerosis.

The specification discloses only 5 nonomers (9-mer peptides) from human KDR that bind to HLA-A0201 with high CTL activity, one of skill in the art would reasonably conclude that the disclosure fails to provide a representative number of species of nonapeptide longer than 9 amino acids or decapeptide longer than 10 amino acids to describe the genus. Thus, Applicant was not in possession of the claimed genus. *See University of California v. Eli Lilly and Co. 43 USPQ2d 1398; University of Rochester v. G.D. Searle & Co., 69 USPQ2d 1886 (CA FC2004).*

Applicant is directed to the Final Guidelines for the Examination of Patent Applications Under the 35 U.S.C. 112, ¶ 1 "Written Description" Requirement, Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 2001.

17. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

18. Claims 5 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Flamme et al (Developmental Biology 169: 699-712, 1995; PTO 892).

Flamme et al teach a peptide such as quail FLK-1 and mouse FLK-1 (VEGFR-2) polypeptide comprising the amino acid sequence VIAMFFWLL, which is 100% identical to the claimed SEQ ID NO: 30 (see page 701, FIG4, residues 1-9 of the reference quail sequence and residues 771-779 of the reference mouse sequence, in particular). The term "comprising" is open-ended. It expands the claimed nonapeptide of SEQ ID NO: 30 to include additional amino acids at either or both ends to include the reference sequences. The reference polypeptides also anticipate the claimed peptide having two or more amino acids have been added to the amino acid sequence of SEQ ID NO: 30. The reference polypeptide inherently has cytotoxic T cell inducibility since cytotoxic T cell recognizes and generates T cells epitope that is 9 ± 1 amino acids in length. The C terminal amino acid reference of the reference peptide is leucine (see sequences in Figure 4, in particular). Thus, the reference teachings anticipate the claimed invention.

19. Claims 5 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by US Pat No. 5,712,380 (issued January 27, 1998; PTO 892).

The '380 patent teaches a peptide such as SEQ ID NO: 15 comprising the amino acid sequence VIAMFFWLL, which is 100% identical to the claimed SEQ ID NO: 30 (see reference SEQ ID NO: 15, residues 772 to 781, in particular). The term "comprising" is open-ended. It expands the claimed nonapeptide to include additional amino acids at both ends to include the reference sequence. The reference polypeptide also anticipates the claimed peptide having two or more amino acids have been added to the amino acid sequence of SEQ ID NO: 30. The reference polypeptide inherently has cytotoxic T cell inducibility since cytotoxic T cell recognizes peptide and generates T cells epitope that is 9 ± 1 amino acids in length. The C terminal amino acid reference of the reference peptide is valine (see reference sequence SEQ ID NO: 15, in particular). Thus, the reference teachings anticipate the claimed invention.

20. Claims 5 and 7-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Kubo et al (J Immunology 152: 3913-3921, 1994; PTO 892).

Kubo et al teaches various human HLA-A24 nonamer peptides or decamers such as polyalanine analogue AAAAAAAAA having various amino acid substitutions at position 1 through 9 and binds to T cell receptor (see entire document, page 3918, Table IV, page 3919, col., in particular). Kubo et al teach the second amino acid from the N terminus is methionine (M)

while the C-terminal amino acid is leucine (L), the peptide binds to HLA-A24 allele class I (see page 3920, Table V, in particular). Kubo et al teach the second amino acid from the N terminus is Leucine (L) while the C-terminal amino acid is Valine (V), the peptide binds to HLA-A2.1 allele class I (see page 3918, Table IV, in particular). Kubo et al teach a composition comprising the reference peptide in carrier such as DMSO/water (see page 3915, col. 1, peptide synthesis, in particular) or in PBS (see page 3914, col. 2, last paragraph, in particular). Claims 9-10 are included in this rejection because a composition is a composition irrespectively of its intended use. Thus, the reference teachings anticipate the claimed invention.

21. No claim is allowed.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong Huynh, Ph.D. whose telephone number is (571) 272-0846. The examiner can normally be reached Monday through Thursday from 9:00 a.m. to 6:30 p.m. and alternate Friday from 9: 00 a.m. to 5:30 p.m. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan can be reached on (571) 272-0841. The IFW official Fax number is (571) 273-8300.

23. Any information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Phuong Huynh/
Patent Examiner
Technology Center 1600
October 26, 2007